

Antioxidant capacities and total phenolic contents enhancement with acute gamma irradiation in *Curcuma alismatifolia* (Zingiberaceae) leaves

Abstract

The present study was conducted in order to assess the effect of various doses of acute gamma irradiation (0, 10, 15, and 20 Gy) on the improvement of bioactive compounds and their antioxidant properties of *Curcuma alismatifolia* var. Sweet pink. The high performance liquid chromatography (HPLC) and gas chromatography (GC) analysis uncovered that various types of phenolic, flavonoid compounds, and fatty acids gradually altered in response to radiation doses. On the other hand, antioxidant activities determined by 1,1-Diphenyl-2-picryl-hydrazyl (DPPH), ferric reduction, antioxidant power (FRAP), and 2,2-azino-bis-3-ethylbenzothiazoline-6-sulfonic acid (ABTS) radical scavenging assay showed a higher irradiation level significantly increased the antioxidant properties. This study revealed an efficient effect of varying levels of gamma radiation, based on the pharmaceutical demand to enhance the accumulation and distribution of bioactive compounds such as phenolic and flavonoid compounds, fatty acids, as well as their antioxidant activities in the leaves of *C. alismatifolia* var. Sweet pink.

Keyword: Antioxidant activity; Bioactive compounds; *Curcuma alismatifoli*; Gamma irradiation